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THE ENGLISH GYPSIES

[The Fortune-Teller.—Sir Joshua Reynolds.]

THE traveller who, with poetic fancies respecting the American Indians, first sees one wrapped up in his blanket in a log-hut tavern, can scarcely be more disappointed and mortified than the writer when he first saw a gypsy encampment. Acquainted with the established fact that the English gypsies are a portion of that Asiatic family which first visited Europe about four centuries ago, and familiar with their appearance from some of the numerous descriptions that our poets and novelists have given of them, he had fancied that there would be at least picturesque wildness in the aspect of a genuine gypsy encampment. There was this drawback to the appearance of the encampment alluded to—it was neither on a "furze-clad common," nor on the skirts of a wood, but on the sides of a narrow lane, which could scarcely be termed "bosky." The tents looked like dog-kennels, the men had a scowling aspect, the women seemed weather-beaten and miserable. They had, however, all the usual and well-known gypsy peculiarities. Their asses cropped the scanty herbage;

> "a kettle
> Slung between two poles, upon a stick
> Transverse,"

was suspended over a fire; and from amongst the group there stepped out a young girl, whose slender and not unhandsome figure, brilliant dark eye, and

> "tawny skin,
> The vellum of the pedigree they claim,"

proclaimed her at once one of that tribe, of whom Bishop Heber said, when he met with a similar encampment in India, that they are "a race that no man can mistake, meet them where he may."

The gypsies are indeed a singular phenomenon in our history. They have been moving over the surface of our continually advancing civilization for upwards of three centuries, and still they retain their Eastern habits. Acts

of Parliament have been thundered at them—the law has dealt with them—justices and constables have chased them from county to county:—they have survived all. Driven into our towns and cities by the inclemency of winter, they scarcely ever fail to go out in summer, to wander about, and pitch their tents, like their forefathers and brethren under the burning sun of India. We may hear them talking in the broadest of our provincial dialects, and presently after muttering words amongst themselves which Sir William Jones pronounced to be "pure Sanscrit, scarcely changed in a single letter." Yet the people have had no literature whatever—no bards to endear to them their primitive accents, nor mountain barriers to keep their language and their customs from being absorbed. One thing has held them aloof: "their hand has been against every man, and every man's hand against them." But this, instead of separating them from us, has only shut them up more closely amongst themselves; and the harsh treatment they generally experienced, and the contempt so unequivocally manifested towards them, never cured their propensities, but only deepened them.

Individuals were occasionally to be found, but rarely, who looked upon them with kindness and pity, and these have sometimes experienced that the gypsies were not destitute of human feelings. Latterly the practice of the system of kindness towards them has been on the increase, especially within the last twenty-five or thirty years; and this, with the numerous inclosures of waste lands, and the diffusion of the conveniences of cities in the country, appear to be slowly effecting what legislation and police could not. Perhaps in another generation one may travel from Dover to Duncansby Head, and neither see nor hear of a gypsy encampment or a wandering "tinkler."

So well established does the Oriental origin of the gypsies appear to be, that Bishop Heber says, "The time and occasion of their arrival in Europe seem the chief problem in their history." Perhaps it is only the "occasion" of their arrival in Europe that constitutes the problem: the "time" appears to be pretty nearly ascertained. It was about the beginning of the 15th century, and it has been conjectured that their movement may have been occasioned by the victories and ferocities of Timour or Tamerlane. They appear to have passed from India to Egypt, and from thence, by the Mediterranean, into Europe. Bishop Heber is inclined to derive the race from Persia rather than India; but the majority of those who have traced the Eastern origin of the gypsies are disposed to consider the latter country as their primitive seat. It is scarcely doubtful that they entered Europe from Egypt. They are first mentioned in Germany in 1417; and they appear, with Eastern subtlety, to have imposed on the people and ecclesiastical authorities with forged stories respecting themselves, in much the same way that the crafty Gibeonites did on Joshua, and for a like purpose. They were a considerable time on the Continent before they crossed over to England. Here they were generally known as Egyptians (from which our word "gypsies" is a corrupt abbreviation), and they must have been in considerable numbers to have called forth the Act of Parliament passed in 1530 (22 Hen. VIII. c. 10), which is termed "An Acte concernyng Egypsyans." The preamble is as follows; it is a general description of the gypsy character to the present day:—

"Forasmouch as afore this tyme dyvers and many outlandyshe people calling themselves Egyptians, using no crafte nor faicte of marchandyse, have comen into this realme, and gone from shire to shire and place to place in great company, and used greate subtyll and crafty meanes to deceyve the people, beryng them in hand, that they by Palmestre coulde telle menne and women's fortunes, and so many times by crafte and subtyltie have deceyved the people of theyr money," &c. They are also charged with "many and haynous felonys and robberies." They were ordered to depart the kingdom within fifteen days, under penalties; and vessels were employed by the government in their deportation. From another act, passed five years afterwards, by which a penalty of 40*l.* was imposed on any one bringing an Egyptian into England, it is evident that captains of vessels found the passage-money of the wanderers to be as productive as that of others.

But neither these Acts nor those of subsequent reigns (one of Elizabeth's ordered them to depart the kingdom, on pain of being declared felons without benefit of clergy) could drive the "Egyptians" from the country. The state of internal communication and the hardy mode of life of the gypsies prevented the law from being carried out in all its rigour. The great bulk of the people stood in awe of them—mysterious beings as they thought them, who, though beggars and outcasts themselves, could yet reveal to their credulous harbourers the secrets of futurity. They were also useful—pests though they were considered—in carrying into remote corners of the country many articles of traffic, and by their mechanical ability in tinkering. When we consider that even in the reign of Queen Anne a cabinet minister wrote to Marlborough, that it would take *two months* to send an order for a national thanksgiving all over the country, we may fancy the usefulness of the wandering gypsies, and regret that legislative horror of their pretences in the absurdities of fortune-telling should have made them be treated with a severity that poisoned the good they might otherwise have done. Under the severe Act of Elizabeth, many gypsies were apprehended from time to time and executed. The severity of the law was mitigated; but from the reign of Queen Anne, the gypsies were included in the Vagrant Act, and described as "persons pretending to be gypsies, or wandering in the habit or form of counterfeit Egyptians, or pretending to have skill in physiognomy, palmestry, or like crafty science."

The gypsies appear to have penetrated into Scotland shortly after their arrival in England—the severities exercised towards them in the south may have contributed to send them northwards. There is a copy of a curious document printed in the first volume of 'Blackwood's Magazine;' it is a writ of privy-seal in favour of "Johnne Faw, lord and Erle of Littill Egypt," granted by James V., and dated February 15, 1540. It is addressed to legal authorities, sheriffs, and others, to assist this "lord and Erle" in the execution of justice "upon his company and folks, conforme to the lawes of Egypt, and in punissing all that rebellis aganis him." The natural inference from this is, that one of the leaders of the gypsies, on their first entrance into Scotland, had succeeded in imposing on the Scottish government, and either under the pretence or on the occasion of an actual feud, had procured a legal recognition of his claims. The cheat succeeded for a time, but was at last found out; the Scottish Vagrant Act of 1579 mentions "the idle peopil calling themselves Egyptians," and classes them along with "strang begares and vagabounds," as well as such as "make themselves fules and are bairdes, or other sik like runners about."

The gypsies of England and Scotland, without losing their own habits and customs, imbibed many of the characteristic manners of the respective countries within which they roved—the Scotch more than the English. This is easily accounted for. The English poor-laws tended in some degree to reduce the numbers of wandering vagabonds and "masterless" men, and to keep the gypsies comparatively free from intermixture. But Scotland, and especially the Borders, or "Debatable Land," swarmed with sturdy and idle vagrants, many of whom intermarried with gypsies, and, in adopting their habits, added to them their own ferocious spirit. There was

thus, in Scotland, down to a comparatively recent period, a race of mongrels, who spoke the broadest Doric of their native country, and had all the lawless courage and independence of the Borderer, yet who lived like some of the wildest tribes of India, and, like them too, deprived each other of life, in their private quarrels, with the most savage vindictiveness. Sir Walter Scott, amongst the many anecdotes which he has recorded of the Scotch gypsies in 'Blackwood's Magazine,' tells one respecting a gang, of which two were quarrelling in a farm-house; and when the one stabbed the other with his knife, the only remark which was made by the others was, "Ye hae dune for him noo, Rab." Sir Walter's father happened to arrive on the instant, and raised a pursuit of the murderer, who, by the assistance of a blacksmith, was apprehended, and afterwards executed. But the blacksmith deemed it prudent to leave that part of the country, to avoid the vengeance of the rest of the gang.

The most common names of the English gypsies are Smith, Cooper, Taylor, Lovell, Bosswel, Lee, Loversedge, Allen, Carew, Corrie, Buckley, Glover, &c. Those of the Scotch—Faa (descended from the "lord and erle of Littil Egypt"), Young, Ruthven, Blythe, Fleckie, Gordon, &c.

The first satisfactory account of the gypsies was given in the Dissertation of Grellmann, translated from the German by Mr. Raper. This work will be noticed in a subsequent article. Grellmann collected a gypsy vocabulary, which was found, on examination by Sir William Jones and other Oriental linguists, clearly to establish the fact of the Indian origin of the gypsies. In our own country, Mr. Hoyland, a member of the Society of Friends, exerted himself with industrious benevolence on the behalf of the gypsies, and wrote a plain but very satisfactory book respecting them, which was published in 1816. Mr. Hoyland's exertions and book were the cause of bringing out the articles in 'Blackwood's Magazine,' to which reference has already been made.

Anxious to gather information which would enable him to devise some plan for the amelioration of the condition of the gypsies, Mr. Hoyland visited several of their encampments, and sent circulars all over Britain, making inquiries respecting them, to which answers were returned, amongst other persons, by Sir Walter Scott. In the summer of 1814, Mr. Hoyland visited a number of gypsy tents in Northamptonshire, in one of which a woman about 80 years of age, who had 40 grand-children, acknowledged that not one of them had been taught to read. Again, in the autumn of 1815, he came up to London, and was taken by a friend to see an encampment in Hainault Forest. Mr. Hoyland had, by studying Grellmann's Vocabulary (taken, be it remembered, by a German from the mouths of Continental gypsies), made himself in some degree master of it. Hearing a young female belonging to the encampment in Hainault Forest saying something in their own peculiar speech to an older woman, he immediately explained the observation. Upon which they at once exclaimed, "The gentleman understands what we say!" and they gave way to immoderate transports of joy, saying they would tell him anything he wished to know of them. The late Lord Teignmouth, by his knowledge of Hindustâni, was able to converse with an old gypsy at Norwood.

Mr. Hoyland afterwards had an interview with a number of gypsies, "collected at the house of his friend, William Corder, grocer, in Broad-street, St. Giles's." "Being accustomed to lay out their money at the shop of this grocer, he said they would be very ready to attend upon his invitation; and accordingly a number of them soon made their appearance." They acknowledged themselves to be gypsies, and many of them had the features as well as the complexion of Asiatics. Mr. Hoyland ascertained that a few of the gypsies continued all the year in London, excepting at the times of their attendance at fairs in the vicinity. Others, when work was scarce, went out twenty or thirty miles round the metropolis, carrying their implements with them on asses, and some of them assisted in hay-making and plucking hops in Kent, Surrey, and Sussex. Among those who had winter-quarters in London there were some who took circuits of great extent.

Norwood, about seven miles from London, was once a famous resort of the gypsies; but its enclosure drove them away. In fact, the neighbourhood of London is more frequented by mongrel and degenerate gypsies, and by mere impostors, than by those who still retain the lineaments of the tribe. Towards the northern and western parts of England the genuine gypsies are still to be found in considerable numbers; and they sometimes encamp in winter as well as in summer. The occupations followed by the English gypsies have been generally those of dealers in horses and asses, farriers, smiths, tinkers, braziers, grinders of cutlery, basket-makers, chair-bottomers, and musicians.

It is perhaps scarcely necessary to allude to the peculiar feature of the gypsy character—"fortune-telling:" but as the wood-cut, taken from Sir Joshua Reynolds's picture, embodies the romance of a practice which has, in reality, very little of the romantic in it, we may make a remark or two on the subject.

Whether the "Egyptians" were proficients in the tricks of palmistry before their arrival in Europe, or, with the quickness and ready tact of Hindú cunning, adopted the practice as a means of earning money at a time when the bulk of the people in all European countries were credulous and superstitious to an extreme, is not certain. This much is certain, that down even to the present day the gypsy in England, and the "spae-wife" in Scotland, can find dupes to put faith in their pretended divinations. London newspaper Police-reports occasionally reveal the fact that silly servants empty their own pockets, and suffer their masters' houses to be robbed while listening to these delusions. The practice, as is well known, and as Sir Joshua's picture imports, has not been confined to dupes in humble life.

Sir Walter Scott, in a communication to Mr. Hoyland, says, "A set of people possessing the same erratic habits, and practising the trade of tinkers, are well known in the Borders, and have often fallen under the cognizance of the law. They are often called gypsies, and pass through the country annually in small bands, with their carts and asses. The men are tinkers, poachers, and thieves upon a small scale. They also sell crockery, deal in old rags, in eggs, in salt, in tobacco, and such trifles; and manufacture horn into spoons."

There are some interesting particulars in Mr. Hoyland's book respecting the colony of gypsies at Kirk Yetholm, who in winter inhabited a street in that town long known locally as "Tinkler's Row." Mr. Hoyland's correspondent says, "When first I knew the colony, old Will Faa was king or leader, and had held the sovereignty for many years. Meeting at Kelso with Mr. Walter Scott, whose discriminating habits and just observations I had occasion to know from his youth, and at the same time seeing one of my Yetholm friends in the horse-market, I merely said to Mr. Scott, 'Try to get before that man with the long drab coat, look at him on your return, and tell me whether you ever saw him, and what you think of him.' He was so good as to indulge me, and rejoining me, said without hesitation, 'I never saw the man, that I know of; but he is one of the gypsies of Yetholm that you told me of several years ago.' I need scarcely say that he was perfectly correct."

The reader will find some observations on the present state of the Tinkers of Scotland, at p. 502, vol. V. of the Penny Magazine. The articles previously referred to in the first and second volumes of Blackwood's Magazine contain a variety of anecdotes illustrative of the daring, vindictiveness, and gratitude of a generation no longer existing.

THE VICTORIA REGINA.

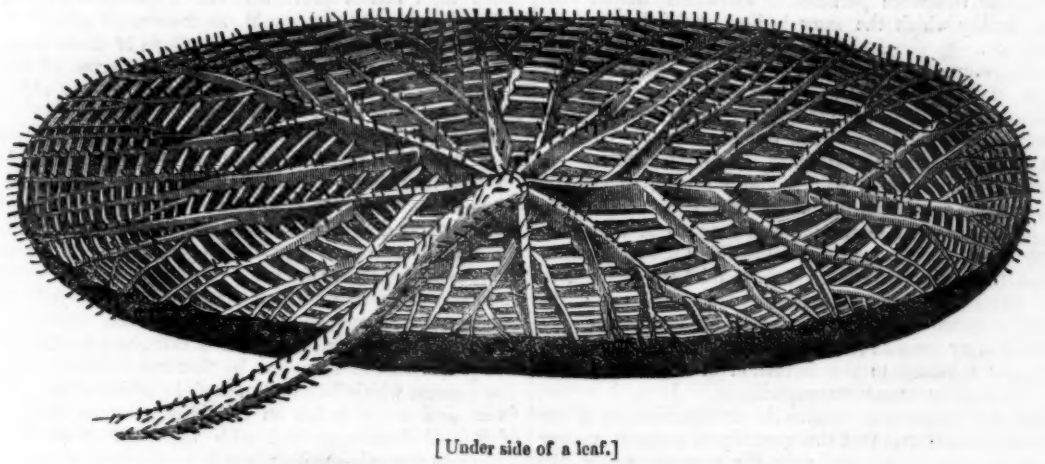
[The Victoria Regina.]

THE forests and rivers of Guiana present an almost unexplored field for scientific research. Mr. Waterton, in his amusing 'Wanderings,' has done something to render their varied treasures familiar to the public; and one might have thought that his book of itself was sufficient to tempt hundreds to tread in his footsteps. But it is not every naturalist or botanist who can kill a "modern Python," or ride "on the back of a cayman close to the water's edge." Although some persons may think that a few of this traveller's lively descriptions have a tinge of the marvellous, one cannot but sympathise with that genuine adventurous spirit in which he travelled the magnificent forests of Demerara and Essequibo. "Alone and barefooted," he tells us, "I have pulled poisonous snakes out of their lurking-places; climbed up trees to peep into holes for bats and vampires, and for days together hastened through sun and rain to the thickest parts of the forest to procure specimens I had never got before. In fine, I have pursued the wild beasts over hill and dale, through swamps and quagmires, now scorched by the noon-day sun, now drenched by the pelting shower, and returned to the hammock to satisfy the cravings of hunger, often on a poor and scanty supper."

Dr. Hancock, in a little pamphlet on the 'climate, soil, and productions of British Guiana,' says, "This new world of vegetables has never been explored or investigated: many of the plants, indeed, have been made known botanically, that is to say, so far as mere descriptive botany goes, or the notation of external forms." "Not only," he adds, in another place, "in respect to numberless products useful in medicine and the arts, but likewise numerous fruits and nutritive vegetables, Europe has yet to become acquainted with these fruitful regions of South America." The engraving given above shows that there are also most extraordinary "vegetable wonders" to be found in Guiana. The two engravings have been copied from the original drawings by permission of the Botanical Society. This new genus, which is allied to the water-lily, has been named "Victoria Regina," by permission of the Queen. Its discoverer, R. H. Schomburgk, Esq., transmitted the original drawings and a description to the London Botanical Society. His communication, which was read at a meeting of the Society on September 7, 1837, is dated "New Amsterdam, Berbice, May 11th, 1837." New Amsterdam, the capital of an almost unknown British colony, stands on the east bank of the Berbice river.

Mr. Schomburgk says, "It was on the 1st of January this year, while contending with the difficulties nature opposed in different forms to our progress up the river Berbice (in British Guiana), that we arrived at a point where the river expanded and formed a currentless basin: some object on the southern extremity of this basin attracted my attention—it was impossible to form any idea what it could be, and animating the crew to increase the rate of paddling, shortly afterwards we were opposite the object which had raised my curiosity—*a vegetable wonder!* All calamities were forgotten: I felt as a botanist, and felt myself rewarded. A gigantic leaf, from five to six feet in diameter, salver-shaped, with a broad rim of a light green above, and a vivid crimson below, resting upon the water: quite in character with the wonderful leaf was the luxuriant flower, consisting of many hundred petals, passing in alternate tints from pure white to rose and pink. The smooth water was covered with them; I rowed from one to another, and observed always something new to admire. The leaf on its surface is of a bright green, in form orbiculate, with this exception opposite its axis, where it is slightly bent in: its diameter measured from five to six feet: around the margin

extended a rim, about three to five inches high, on the inside light green, like the surface of the leaf, on the outside like the leaf's lower part, of a bright crimson. The stem of the flower is an inch thick near the calyx, and is studded with sharp elastic prickles about three-quarters of an inch in length. The calyx is four-leaved, each upwards of seven inches in length, and three in breadth at the base; they are thick, white inside, reddish-brown and prickly outside. The diameter of the calyx is twelve to thirteen inches: on it rests the magnificent flower, which, when fully developed, covers completely the calyx with its hundred petals. When it first opens, it is white with pink in the middle, which spreads over the whole flower the more it advances in age, and it is generally found the next day of a pink colour; as if to enhance its beauty, it is sweet-scented: like others of its tribe, it possesses a fleshy disk, and petals and stamens pass gradually into each other, and many petaloid leaves may be observed, which have vestiges of an anther. We met them afterwards frequently, and the higher we advanced the more gigantic they became: we measured a leaf, which was six feet five inches in diameter, its rim five and a half inches high, and the flower across fifteen inches. The flower is much injured by a beetle (*Thrincius* species?) which destroys completely the inner part; we have counted from twenty to thirty in one flower."



[Under side of a leaf.]

DOMESTIC CHEMISTRY.—II.

Domestic Waters.

If we look around us at the processes, both natural and artificial, which are constantly going on, and at the changes in appearance and in property which those processes induce on material bodies, we cannot fail to arrive at the conclusion that Water stands in the foremost rank of important agents in bringing about those changes. It is impossible for us to say whether air or water renders the larger amount of useful service to man: whether air, by its indispensable agency in the process of respiration, and consequently in the maintenance of vitality—or water, by its infinite use as a solvent, as a food indispensable to animals and vegetables, upon which their growth, luxuriance, and utility depend; as a modifier and corrector of that powerful principle, heat; and as the source of that delightful freshness and fertility which render the earth so beautiful, and the air which surrounds it that healthful, admirable medium which we know it to be. But happily no necessity exists that we should establish a competition for priority of claim to our admiration, between those two bodies; suffice it to say, that so manifold are their applications, that no human ingenuity or research has yet discovered all the uses of either of them. Each one draws largely on our gratitude for the service to which man has been able to apply it, and should at the same time incite us to enlarge and extend the bounds of its utility by observation and experimental inquiry.

It need not excite our surprise that in the early ages Water was looked upon as one of the elements of which all inanimate nature was formed—the other three being Air, Fire, and Earth; and it was not until the latter end of the last century that the rapid extension of chemical inquiry elicited the truth that water is not an element, or a simple substance, but that it is composed of two bodies, both of which are, in the uncombined state, gaseous; that is, oxygen and hydrogen.

To Mr. Henry Cavendish is due the merit of having first decomposed water in the year 1766 Oxygen gas was discovered by Dr. Priestley on the 1st August, 1774. But the grand experiment which decided the truth of the statement that pure water consists of nothing but oxygen and hydrogen was performed at Paris, in 1790, by Fourcroy, Vauquelin, and Seguin; and the circumstances under which the experiment was carried on strikingly illustrate the energy and perseverance of those chemists. They kept the process in constant activity for 185 hours successively—alternately taking a few hours' rest on mattresses kept in the laboratory. The quantities of gas and of the resulting liquid were as follows:—They burnt 25,963·568 cubic inches of hydrogen, which weighed 1039·358 grains. In the process of combustion 12,570·942 grains of oxygen were consumed, which weighed 6209·869 grains; the total weight of the two gases being 7249·227 grains. By this process the two gases were combined, and there resulted 7244 grains of water, being only 5¼ grains less than the previous weight of the gases employed.

Such then being the gaseous materials of which water is formed, we proceed to give within a limited compass a general view of the availability of water for the purposes of life; and in so doing we shall find it convenient to adopt a mode of classification by which water may be divided into different kinds, such as the different properties which it exhibits may seem to justify. Many different modes of classification have been used, but that which we shall adopt will be to consider water under two general heads, that is, *Domestic*, and *Medicinal*. We proceed now to consider domestic water in the order, according as it is derived from the atmosphere, from springs, from rivers, and from lakes. The second division will include short accounts of medicinal waters, such as sea water, and the numerous kinds of mineral waters.

I. Domestic Waters; that is, such as are used for drinking and ordinary domestic purposes.

This class may be conveniently considered to comprehend four kinds: 1st, Atmospheric Water; 2nd, Spring Water; 3rd, River Water; and 4th, Lake Water.

1. Atmospheric water may include all the liquid re-

sults of atmospheric phenomena, such as rain, hail, snow, &c., in the state in which they fall to the earth, and before they have acquired any mineral taint by passing over or through the surface of the ground. This water is very pure, and contains but a small portion of foreign matter, part of which it is supposed to absorb in its passage towards the earth—especially over large towns. This may serve to account for the fact that in general hail and snow are found to be in a state of greater purity than rain; for as hail consists of the drops of rain frozen in the act of falling, and snow of the watery vapour frozen before it has had time to form into globular drops, it is obvious that they cannot attract and take into their substance particles of extraneous matter with that facility which the same bodies in the liquid form could do.

The source of this atmospheric water is evaporation from the surface of the ocean, seas, rivers, lakes, &c. This evaporation is constantly going on from those surfaces, even at the lowest temperatures, until the superincumbent air is saturated—that is, contains as large a portion of water as it will retain in a state of vapour. That steam rises from the surface of a body of water in a hot day is well known; but it may excite some surprise to be told that on the coldest day steam is rising from the same surface—nay, the solid form of ice does not prevent a portion of its substance ascending in the form of steam. This portion is, however, at low temperatures very minute; but that a low temperature does not put a period to the formation of steam has been established by numerous experiments. It is, however, when the temperature attains the medium height of the temperate climates that the quantity of aqueous vapour becomes important; and near the equator, where the sun's rays, being received nearly vertically, are necessarily more powerful than when received more obliquely, the quantity of water which ascends into the atmosphere in the form of steam is enormous. It may be seen, by referring to a map, that nine large rivers pour their waters into the bosom of the Mediterranean Sea, besides a great number of smaller rivers. By experiments made on the dimensions and velocities of the principal rivers, it has been computed that nearly 200,000,000 tons of water flow into the Mediterranean per day; but what is more extraordinary, it has been stated that upwards of 500,000,000 tons evaporate from the surface of the Mediterranean in the course of a hot summer's day; that is, 2½ times as much as the whole of its tributary rivers supply to it in the same time. This increase of evaporation above the amount of the supply from the rivers accounts for the current which is always flowing from the Atlantic through the Straits of Gibraltar into the Mediterranean—a phenomenon which was considered inexplicable until the influence of evaporation was taken into the account.

Besides the evaporation from the surface of water, there is likewise a constant ascent of vapour from vegetable and other substances during the day, when the sun raises the temperature of the surface of the earth considerably above its mean temperature. A familiar mode of estimating, in a rough way, the amount of this evaporation on a given surface, was devised by Dr. (afterwards Bishop) Watson, which we will describe in his own words:—"On the 2nd of June, 1779, when the sun shone bright and hot, I put a large drinking-glass, with its mouth downwards, upon a grass-plat which was mown close. There had been no rain for above a month, and the grass was become brown. In less than two minutes the inside of the glass was clouded with a vapour, and in half an hour drops of vapour began to trickle down its inside in various places. This experiment was repeated several times with the same success.

"That I might accurately estimate the quantity thus raised in any certain portion of time, I measured the area of the mouth of the glass, and found it to be twenty square inches. When the glass had stood on the grass-plat one quarter of an hour, and had collected a quantity of vapour, I wiped it inside with a piece of muslin, the weight of which I had previously taken; as soon as the glass was wiped dry, the muslin was weighed again: its increase of weight showing the quantity of vapour which had been collected."—*Chemical Essays*, vol. iii., p. 54. From the mean of several experiments, Dr. Watson found the quantity to be six grains in a quarter of an hour; which, reckoning at that ratio, would give 1600 gallons in 24 hours from an acre of ground. This, it will be remembered, was on a hot day, when no rain had fallen for a month previously, and is therefore very far below the quantity that would rise from moist grass.

An inquiry into the causes and effects of these atmospheric phenomena does not fall within the scope of this article, and would lead us too far from it, as our object is to treat of the liquid product of these phenomena.

2. *Spring Water.* We have hitherto been speaking of the water which results from atmospheric phenomena in the state in which it falls from the clouds, without tracing its properties modified by contact with the earth. But we shall now find that the same water no longer exhibits the same characters if it pass through strata of earth previous to being applied for use.

That portion of rain, hail, and snow which falls on the liquid portions of the earth's surface, necessarily mixes with the water into which it falls, and its distinctive properties are soon lost by that commixture. But that portion which falls on the land is subjected to a different process: if it fall on a field of grass or any plot of ground thickly covered with vegetation, part of it sinks into the soil—another part is evaporated as soon as the rain, &c., ceases—and a third portion is decomposed by the vegetable bodies themselves, the hydrogen being absorbed as part of the food of the vegetable, and the oxygen being given off in the state of gas. It is this which renders the vicinity of vegetation so refreshing to man after a shower of rain—oxygen being, of all other substances, the most active supporter of animal life. Thus much for the rain, &c., which falls on a verdant soil; but if it fall on a barren mountain track, or on a sandy plain, a different train of effects follows. Here no vegetation, or at most a very small portion, is present to decompose part of the water as it falls, nor are there any succulent roots to absorb the moisture from the soil. All therefore which does not evaporate must sink into the soil, and force for itself an outlet in another direction. If the surface be rocky, the water will merely flow down the outside; but if it be porous, the water flows into the pores, both by virtue of gravity and of capillary attraction. By this means an infinite number of minute threads or filaments of water may be filtering through the soil, and will continue to do so until they find either a cavity which will serve as a reservoir, or a compact stratum of earth or clay which resists their farther progress. If the latter be the case, the little stream will take a lateral or oblique course, as the case may be; always tending, whenever an opportunity occurs, to the lowest level. We may in this way suppose that a large extent of sandy strata in a mountainous district has formed an assemblage of channels for the passage of minute filaments of water, but that at a certain depth below the surface the stratum of sand was succeeded by one of clay, the adhesive tenacity of which prevented any percolation through it. The little infant streams would then seek a new path, and would follow the course of the sandy soil in a lateral direction. This course might extend beyond the base of the mountain, and beneath the soil of a neighbouring plain or valley. If now a fissure or perforation, either natural or artificial, were made through the vegetable soil down to the sand which contained the little streams of water, the latter would ascend

through the fissure to a height depending upon the height of the subterranean streams in the interior of the mountain; that is, it would ascend to the surface of the ground in the valley, provided there was a continuous chain of liquid streams to an equal elevation in the mountain. Thus would arise the first germs of a spring-well; and, when once formed, it would be constantly supplied, as the neighbouring streams became gradually brought into the same channel. Were this process, however, the only one carried on in the supply of a spring, the supply of the well would be constantly fluctuating, and in a short time after the cessation of rain the well would become dry. This is however, in most cases, prevented by the existence of natural reservoirs in the mountain, at or above the level of the water in the well. There is no doubt that there are many cavities in the body of a mountain, the result perhaps of a disruption in remote ages. These cavities act as reservoirs for a multiplicity of little streams which have percolated through the upper strata, and as long as any water remains in those reservoirs the well in the neighbouring valley will continue to afford its supply.

The above is a rough outline of the origin of spring-wells, and will serve to give a general idea of their formation; but there are many circumstances which modify the abundance of the supply and the degree of difficulty with which it is attained. Some springs are supplied from such an elevated source, that the water spouts out of the ground in a continued stream; while, on the other hand, some are derived from such a depressed source that a well has to be sunk 300 or 400 feet in depth before the water can be reached. In some springs the flow of the water is intermitting, being very abundant at one time, and altogether suspended at others.

The rain water, by thus slowly trickling through minute pores, undergoes a process of filtration, which in most cases gives it a crystalline purity which has served poets with analogies and similes ever since poets existed. But this filtration is not the only process which it undergoes: it does not pass through the soil without imbibing some foreign matters as well as losing others. The mineral qualities of the different soils through which it has percolated invariably produce some changes in its composition. If it pass through a chalky soil, it absorbs a portion of lime into its substance: if the soil be ferruginous, it absorbs iron, and so forth. When the foreign matter which the water has absorbed is of a saline or a complicated nature, the water then comes under the denomination of *mineral water;* but when its properties have suffered the least possible change, it is then called *pure spring water*, which differs from rain water principally in containing a portion of lime. This lime rather improves than deteriorates its quality for drinking, but at the same time imparts to it that quality which we call *hard*, by which it is rendered unfit for many domestic purposes. Two of the most frequent applications of water are, 1st, to soften by steeping, washing, &c.; and 2nd, to extract the nutritious or valuable principle of bodies by boiling, infusion, decoction, &c. For both of these purposes spring water is less available than rain water, principally on account of the lime which it contains.

AMERICAN TRAVELLERS AND TRAVELLING.

[From a Correspondent.]

No people in the world are such great travellers as the Americans. By this assertion I would not be understood to mean that they are a travelled nation, as taken in the general acceptation of the word *travelled*. My assertion has mainly a reference to their erratic and unsettled habits and dispositions that everywhere forcibly strike the foreign observer. In England, and many other old-fashioned countries, there are thousands of persons who never were beyond the limits of the county in which they were born, or scarcely indeed beyond the boundaries of their native parish. With the Americans it is not so: it would puzzle one to find a man, or a woman either, of thirty years of age, that had never been beyond the boundary of the State in which he or she may be residing, although that State should be as large as either Scotland or Ireland.

I have no doubt that the *newness* of the country is the primary and chief cause of the erratic disposition of the Americans; and, unlike the inhabitants of older and thickly-settled communities, the great bulk of the rural population is composed of sojourners and wanderers. Ask a young and enterprising settler that you may chance to meet on the banks of the Upper Mississippi, or on the Missouri, to which State his family belongs; and he will probably answer, "that grandfather was residing in New Hampshire when father emigrated among the early settlers to Ohio; and that father's folks were still living in Ohio when I came West." Now here are three generations (provided the father and grandfather be still alive) living from six to eight hundred miles apart, and yet, in common conversation, you will hear them speak of each other as familiarly as if they resided in three adjoining parishes. It is nothing uncommon for a farmer settled far into the interior to pay occasional visits to his friends and connexions in the old settlements; partly for an opportunity of boasting to his old acquaintances of his success in his new and adopted settlement, and partly from a desire to induce other persons to emigrate to his part of the country. Many, at first sight, will not understand why he is anxious to give his settlement a high character: but the advantages are two-fold; either it will enable him to sell his farm to good advantage, or it will induce other persons to settle in his vicinity—every additional settler increasing the value of the property of those already there. But the farmers, or, more properly, the pioneers of the country, are not more erratic than the commercial and trading portion of the community; for a storekeeper in a small country village, or at some "four-corners" (cross roads), will not only travel twice in the year to some seaport two or three hundred miles off, but he will go as far in some other direction to lay in a stock of cast-iron or earthenware, and then take some other route to purchase such "notions" as the country may produce; besides, during the proper season, he will probably scour the country in search of such cattle as it may seem advisable for him to drive to the distant city market. Business in the country is not done by commission. Every man buys and sells and "trades" (barters) his own goods and chattels himself. A man takes out a patent for the manufacture of some domestic article—a churn, for instance—and having stuck to his plane and his chisel until he has got as many made as a small waggon with one or two horses will conveniently carry, he immediately harnesses his team, and sets out without any definite plan for his journey, and "peddles" his churns from town to town and village to village, until he has managed to dispose of his cargo. So it is with all other minor manufactures; the manufacturer, instead of waiting for orders, sets off with a load of his merchandize, and does not return until he has converted it into money, or goods of some sort that will answer his purpose equally well.

Where the people are such general travellers, it seems natural to suppose that the facilities for travelling would be very great. This, however, is not exactly so; first, because the roads in general are very indifferent, for lack of funds to make them better; and, secondly, the majority of the people travel in their own conveyances—of one description or another. These are one or two-horse waggons, rude as the wilderness they are destined to travel through, or light and ornamental, according to the tastes and circumstances of the owners. In America the stage-coaches, with few exceptions, profess not to travel

by night; but owing to the badness of the roads, and the consequent breaking down of the carriages, and the absence of any regulation as regards time, you frequently find yourself in the midst of some lone wilderness at midnight, when you expected to have been comfortably in bed. The carriages, too, are very uneasy; for, besides the misery of sitting three on a seat, and three seats to each carriage (nine insides), the springs are necessarily so stiff and strong, that the jolting is intolerable. Nor can much be said for the accommodations of the stage-houses: in general you find enough to eat and drink, although that may be of a kind and quality you by no means would have chosen, had you been consulted in the matter; but from the looks and demeanour of those who furnish the "victuals," you are at no loss to conclude that *you* are the party obliged, and that you ought to be very thankful for whatever the tavern-keepers may choose to provide, although you are made to pay pretty well for "victuals and accommodation."

On many routes where stage-coaches run there are actually no regular places for the passengers to partake of refreshment. Of course there are relays of horses at certain places along the road; but it often happens that the horses are kept at some small farm that answers pretty well as regards distance, without any regard to the accommodation of passengers. All the stage-coaches running in the interior of the country carry the mail-bags; and the contractors, being aware that nobody will travel by the stage that can help it, never consult the comfort or convenience of passengers. The contractor being the sole individual concerned, he endeavours to find stabling for his horses all along the route at the most desirable distances; and in some of the unsettled parts of the country he has to erect sheds and stables, and hovels for the persons to reside in who take care of the horses. Hay, in such case, has to be brought from a considerable distance; but oats are generally brought by the stage in daily allowance. Not being stinted to time,—for the government contracts which make any mention of *time* give it in days, and not in shabby hours and minutes,—the drivers are tolerably accommodating; for if the passengers express a wish to have "a meal's victuals" at some road-side tavern which is not a regular stopping-place, there is rarely any serious objection made to such an arrangement, provided the tavern-keepers are able and willing to supply the needful.

Occasionally you arrive at a section of the road that is considered impassable, even for the strong-springed and stout hickory-built stage-coaches of the new countries: on such occasions you are put into a common uncovered lumber-waggon, a machine considered equal to undergo every species of jolt and thump that may be encountered under the impulse of a four-horse power; the only possible accident that can befal it consisting of an overset. But an open lumber-waggon, travelling at the rate of two or two and a half miles per hour, in a storm of wind and rain, or of sleet and snow, is by no means a pleasant conveyance; and many a time have I descended from a cumbersome vehicle of this sort, and walked forward to the next halting-place, leaving my luggage and the mail-bags to arrive an hour or two afterwards. Among the "traps" are straps, and ropes, and chains, composing the "extra" stores of a backwoods stage-driver; and that indispensable implement, the axe, must never be omitted; for on lines of road which intersect large tracts of the forests of America, and along which few wheel-carriages besides the stage travel, and the stage probably but once or twice in the week, you seldom fail to find some huge tree across the road during some part of a day's journey, which, had not the driver brought an axe with him, would have proved an impassable barrier. But that implement being at hand, the whip is relinquished for the axe, and in the course of an hour, or something more, according to the size, the tree being lopped of its branches, all hands are summoned to assist to roll the log out of the way.

Travelling upon horseback is not generally resorted to in very long journeys; for, where the expense is not looked at, stage-coaches are generally patronized upon routes where there is no water-conveyance; but although the fares are very moderate, they have to be paid in *cash*, and cash, among the backwoodsmen, "is a considerable scarce article." The most common mode of travelling, therefore, is the small waggon, generally light enough for one horse, but occasionally drawn by two; and when there is sufficient snow in winter, the sleigh is universally substituted. To the traveller this mode is less fatiguing than riding upon horseback; and if there be but a light weight in the waggon, and the country pretty level, probably the horse is no great sufferer by this waggon system; for I have known 40 or 45 miles as the daily average rate of travelling where the horse has been but an indifferent one. This is also a cheaper mode of travelling than on horseback, for it enables the party to carry his or their provisions along with them, and often some few "notions" (articles of merchandize) to barter with the settlers for "a night's lodging and horse-keeping." An intelligent, 'cute Yankee, who understands matters of this sort, will manage to make a journey to the Far West, a distance of a thousand miles or upwards, with an incredibly small outlay of cash.

But steam-boat travelling is the kind above all others patronized by Brother Jonathan's people. Many a time have I been astonished at the crowds upon crowds of steam-boat travellers. Generally the fares are very reasonable, and sometimes exceedingly low. Many of the boats are fitted up splendidly, with excellent accommodations for everything but sleeping. But how is it possible to accommodate some hundreds of passengers with comfortable sleeping-berths, even in a boat of the largest size? When all the sleeping *shelves* and *ledges* have received their quota, the immense dining-cabin is cleared, and the cushions from all the seats are spread upon the cabin tables, which form a square platform in the centre of the cabin. When the signal is given that the platform is ready, a rush down the cabin stairs takes place, and presently the platform is covered with parallel rows of human beings.

There is another mode of travelling by water, which thousands of the Americans patronize, and that is by their canals. Being remarkably fond of their ease, a canal-boat is the very thing for those that are not in a hurry; and those that are in a hurry find no other mode of conveyance much more rapid than canal travelling; I mean in the interior of the country, where the roads, for the most part, are bad. Four miles per hour, or nearly one hundred miles during the twenty-four, is the rate at which most of the packet-boats travel. Where the capacity of the canal will admit of it, you find large and commodious boats, well stored with provisions of all sorts, and, except for the monotony of canal travelling, by no means uncomfortable conveyances.

Railroads, however, are making rapid inroads upon the canal traffic; and when we take into the account both the extent and general levelness of the country, there is no saying where they may terminate—probably at the foot of the Rocky Mountains, or on the shores of the Pacific. But after all I am inclined to the opinion that America, priding herself as she does upon her inland waters—her noble rivers and lakes—will long continue the most remarkable country in the world for steam-boat travelling, notwithstanding the railroads that do, and may hereafter, chequer a large portion of that vast continent.

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